



D25 – DELIVERABLE C3.2.2

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D25 / C3.2.2 Domain specific vocabularies for EUROPEANA - final Concept for inclusion of domain specific metadata vocabularies and contribution to improving access to scientific information via EDM

Revision: Version 1.1

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P	Public	x
C	Confidential, only for members of the consortium and the Commission Services	

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Statement of Originality

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Distribution

Recipient	Date	Version	Accepted YES/NO
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1 DESCRIPTION OF WORK

Based on the analysis of EDM and various domain specific vocabularies a concept for inclusion of metadata vocabularies and metadata enrichment was worked out. For this purpose existing tools for building and deploying semantic knowledge representations were evaluated.

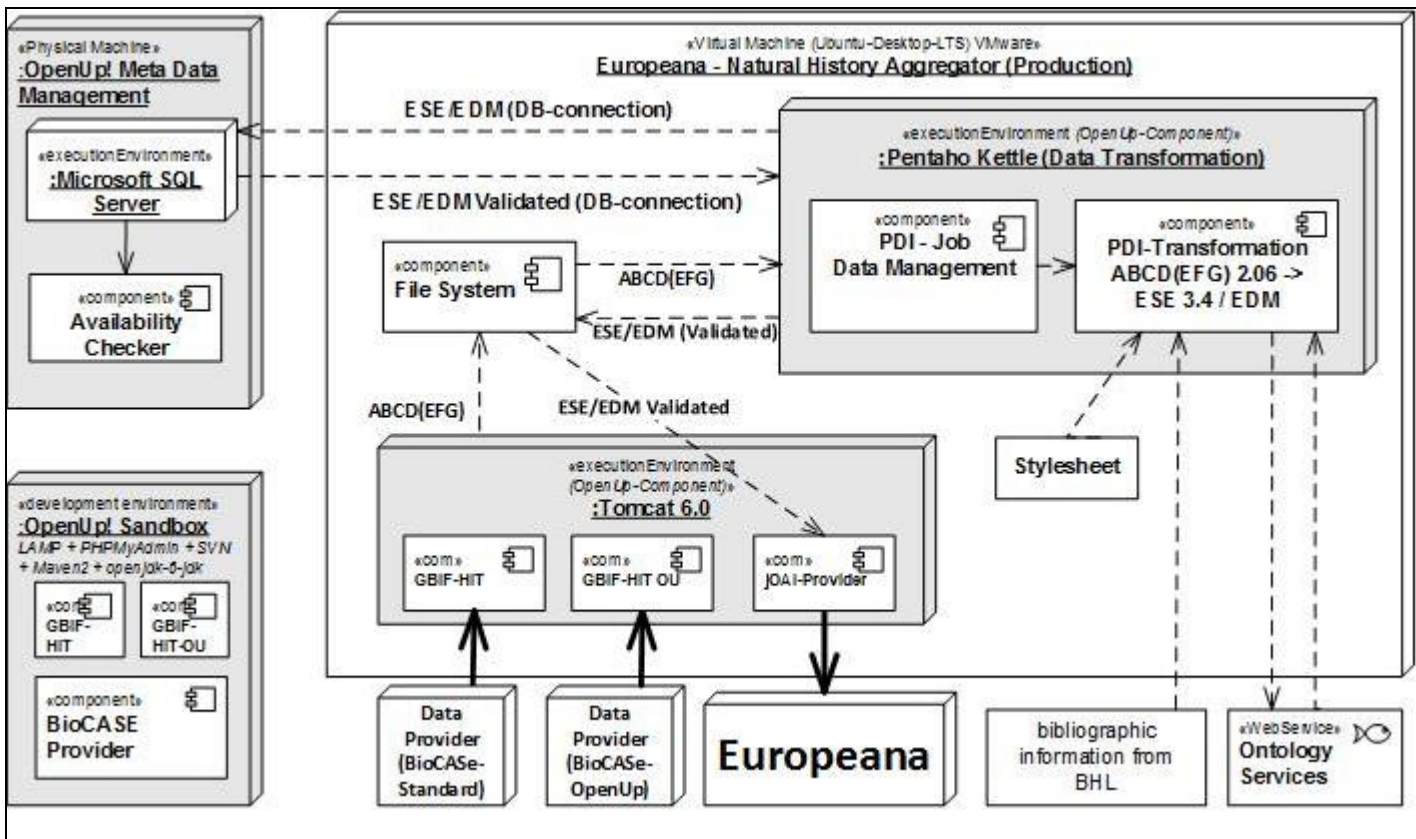


Figure 1 Ingesting records into Europeana (technical components)

The contextual classes of EDM support the modelling of semantic enrichment and allow to present information that is distinct from the actually provided cultural heritage object as giving additional details on eg. the common names of the depicted natural heritage object data, or the link to the place of gathering. Usually the values of the properties of these classes are taken from controlled vocabularies and thesauri in form of identifiers that link to further information to the vocabulary term (eg. the longitude/latitude of the place of finding, the various common names etc.) The enrichment processes in OpenUp! fulfil the tasks to provide the values of the properties of the EDM contextual classes edm:Place and skos:Concept, and OpenUp! enriches the data by linking to an object type vocabulary (edm:hasType) and to external bibliographic information from the Biodiversity Heritage Library (dc:relation).

In this document the used services and results are presented.

2 COMMON NAMES VOCABULARY SERVICE

A style sheet is used in order to set the rules for displaying the mapped vocabulary information (see Figure 2).

This stylesheet defines that the vocabulary information is added to a record via the metadata field *dc:subject*. For each *abcd:FullScientificNameString* the vocabulary is searched for an appropriate common name. When one is found it is added to the metadata as a value of *dc:subject*.

Because Europeana does not display the *skos:note* that carries the references to the vocabulary sources so far in the portal OpenUp! added the to the common names web service the *skos:editorialNote* field that displays a link to the vocabulary information. The *skos:editorialNote* is added as final *dc:subject* field to the object description.

```
<xsl:if test="$restricted = 'N'">
  <xsl:for-each select="fn:distinct-values(
    /biocase:response/biocase:content/DataSets/DataSet/Metadata/Description/Representation/Title
  )">
    <dc:source><xsl:value-of select="."/></dc:source>
  </xsl:for-each>
</xsl:if>

<xsl:for-each select="fn:distinct-values($units/Unit/skos:Concept/skos:prefLabel)">
  <dc:subject>
    <xsl:value-of select="." />
  </dc:subject>
</xsl:for-each>
<xsl:for-each select="fn:distinct-values($units/Unit/skos:Concept/skos:editorialNote)">
  <xsl:if test="contains(., 'http://') or contains(., 'https://')">
    <dc:subject>
      <xsl:value-of select="." />
    </dc:subject>
  </xsl:if>
</xsl:for-each>
```

Figure 2 EDM Stylesheet

2.1 Extension of Pentaho Transformation and its Parameters

The transformation of the OpenUp metadata from the ABCD format into the ESE/EDM format is done with the Pentaho Kettle PDI tool. In order to generate the metadata suitable for Europeana's EDM format the ESE transformation routine is extended with the Ontology data. This is done by using the Ontology Data Gateway's REST service in the transformation program (see Figure 3).

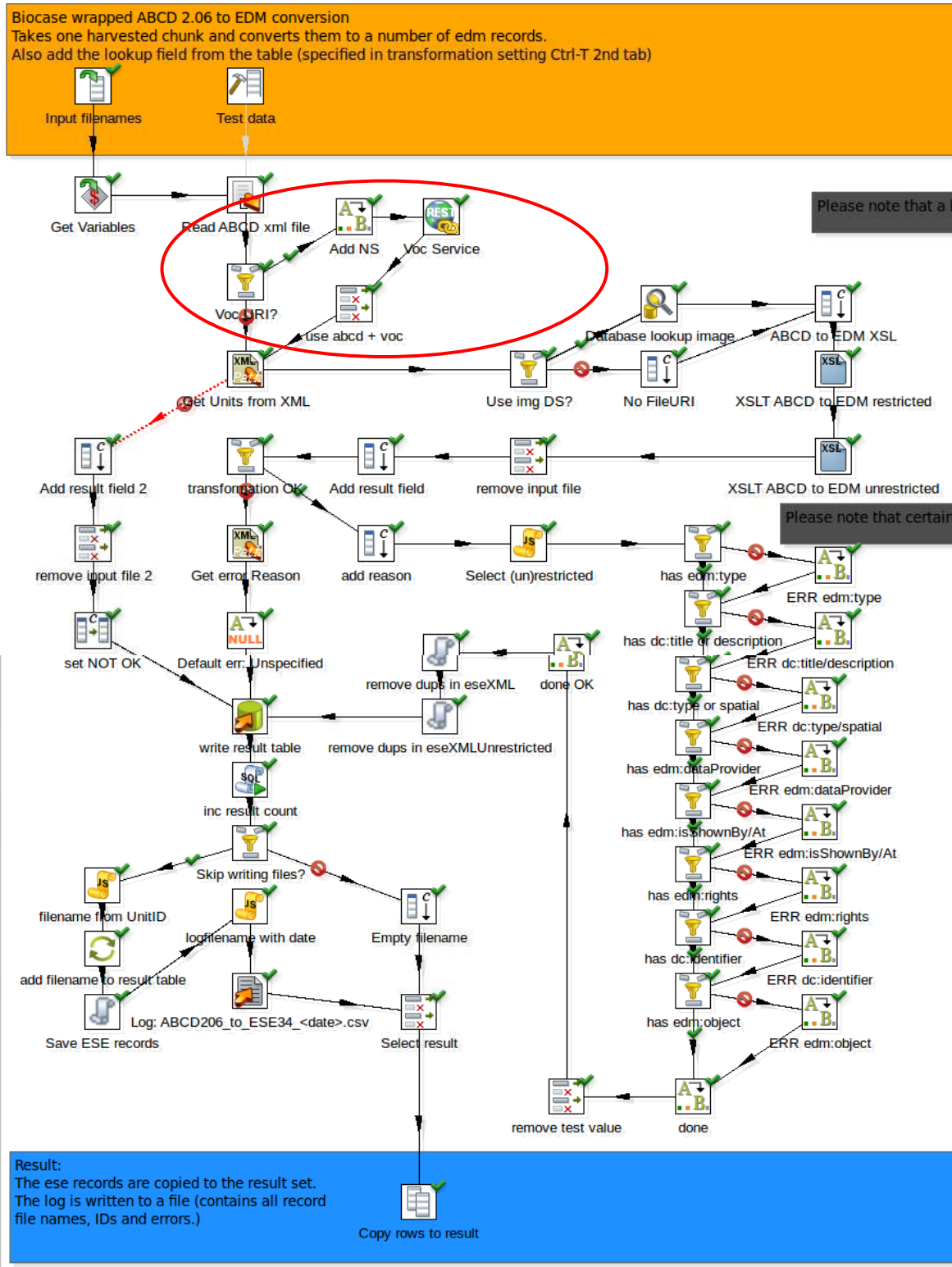


Figure 3 Extended Pentaho Transformation with REST service (marked red)

2.1.1 Extension 1: Voc URI?

The first step called “Voc URI?” is a *Filter Rows* step. If there is a vocabulary URI the data is forwarded to step two “Add NS”. Otherwise it is directly sent to “Get Units from XML” (compare Figure 3). Figure 4 shows the configuration of this step with its condition.

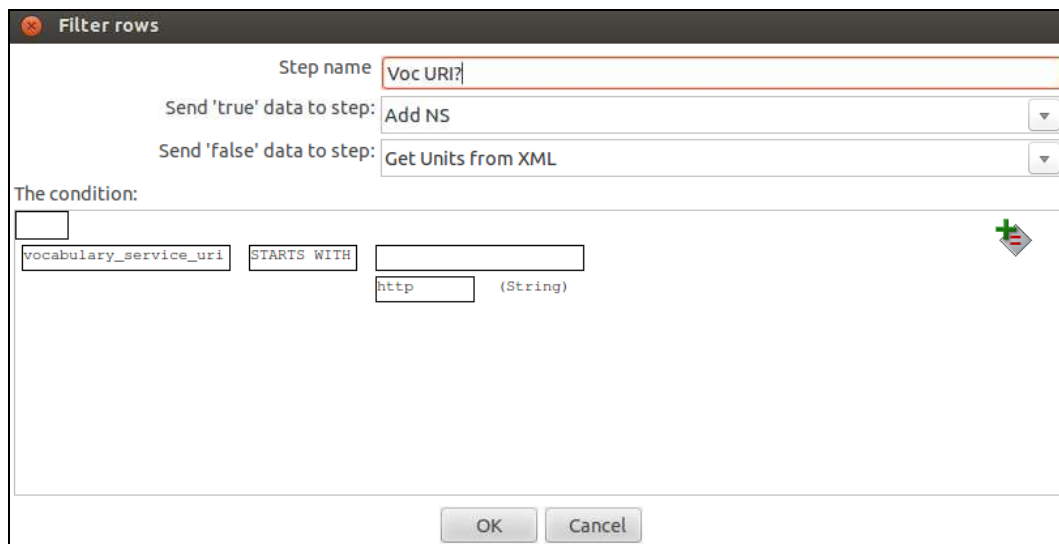


Figure 4 The Filter Rows step “Voc URI?”

2.1.2 Extension 2: Add NS

When there is a vocabulary URI the data is sent to the second step “Add NS” (add namespace). This “*Replace in String*” step replaces `<biocase:response` with `<biocase:response xmlns:dc=http://purl.org/dc/elements/1.1/` and adds the namespace (see Figure 6).

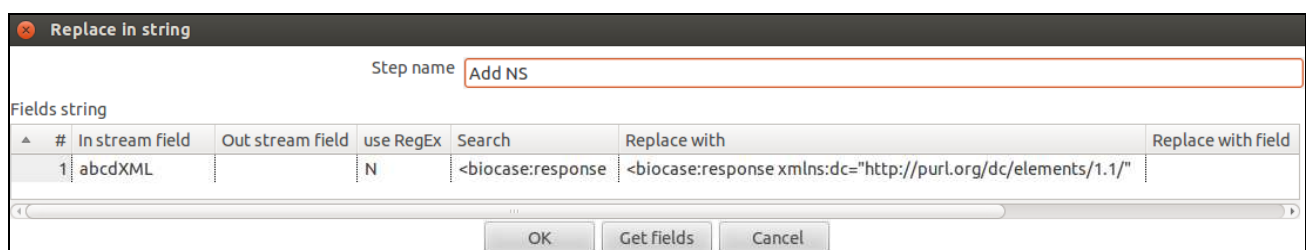
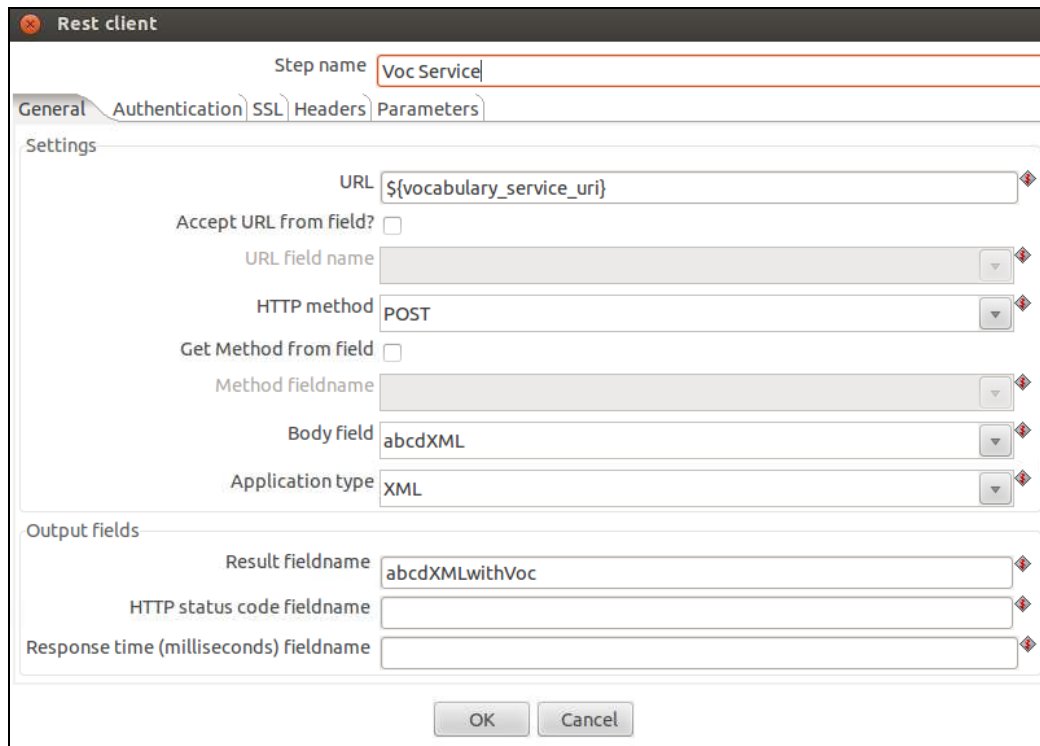


Figure 5 Step 2: Adding a namespace

2.1.3 Extension 3: Voc Service

The “*Rest client*” step named “Voc Service” accesses the Ontology Service (see Figure 6) and is defined with the variable URL `${vocabulary_service_uri}` which is represented in the Transformation Parameters (see Figure 7, Parameter number 18 with URL http://ait117:8080/Vocabulary/rest/~Mapping/NHMW_common_name/perform).



Rest client

Step name:

General | Authentication | SSL | Headers | Parameters

Settings

URL:

Accept URL from field?

URL field name:

HTTP method:

Get Method from field?

Method fieldname:

Body field:

Application type:

Output fields

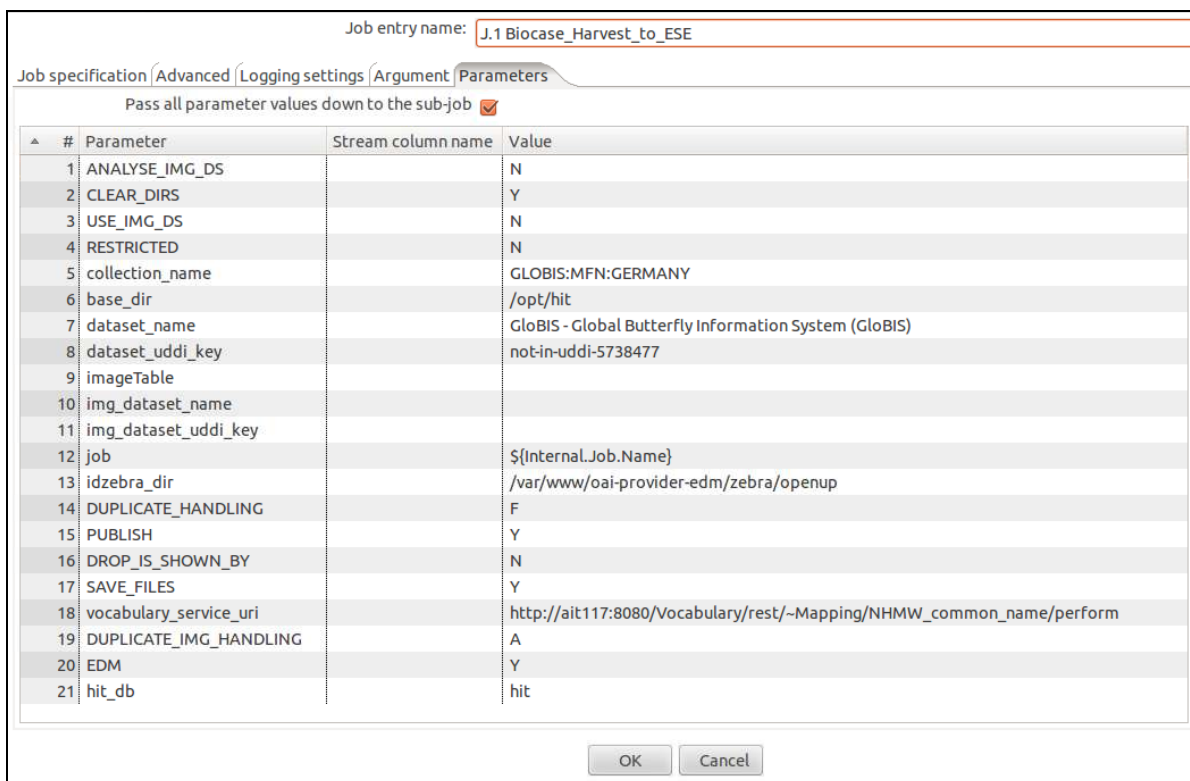
Result fieldname:

HTTP status code fieldname:

Response time (milliseconds) fieldname:

OK Cancel

Figure 6 Pentaho Ontology Service access



Job entry name:

Job specification | Advanced | Logging settings | Argument | Parameters

Pass all parameter values down to the sub-job

#	Parameter	Stream column name	Value
1	ANALYSE_IMG_DS		N
2	CLEAR_DIRS		Y
3	USE_IMG_DS		N
4	RESTRICTED		N
5	collection_name		GLOBIS:MFN:GERMANY
6	base_dir		/opt/hit
7	dataset_name		GloBIS - Global Butterfly Information System (GloBIS)
8	dataset_uddi_key		not-in-uddi-5738477
9	imageTable		
10	img_dataset_name		
11	img_dataset_uddi_key		
12	job		\${Internal.Job.Name}
13	idzebra_dir		/var/www/oai-provider-edm/zebra/openup
14	DUPLICATE_HANDLING		F
15	PUBLISH		Y
16	DROP_IS_SHOWN_BY		N
17	SAVE_FILES		Y
18	vocabulary_service_uri		http://ait117:8080/Vocabulary/rest/~Mapping/NHMW_common_name/perform
19	DUPLICATE_IMG_HANDLING		A
20	EDM		Y
21	hit_db		hit

OK Cancel

Figure 7 Pentaho Parameters

2.1.4 Extension 4: use abcd + voc

Finally the forth step “use abcd + voc” is a “Select Values” step which is executed in order to select other needed fields. As can be seen in Figure 8 the field *abcdXMLwithVoc* is renamed to *abcdXML*.

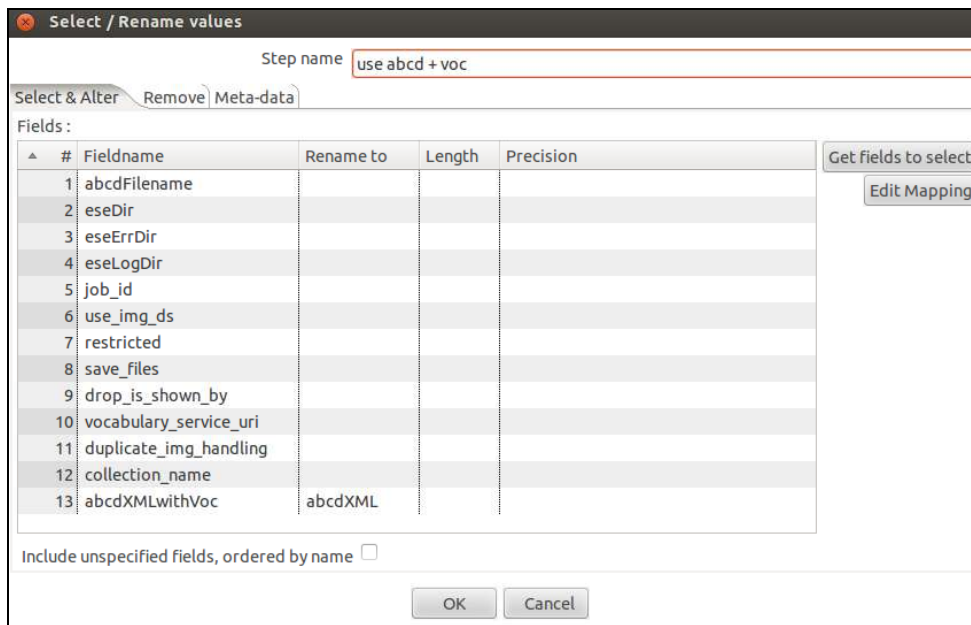


Figure 8 Renaming “abcdXMLwithVoc” to “abcdXML”

2.2 Transformation result

Figure 9 shows the butterfly *Papilio machaon* Linnaeus, 1758. The sample record for this specimen is shown in Figure 10. As can be seen the record includes many subjects with common names in different languages.

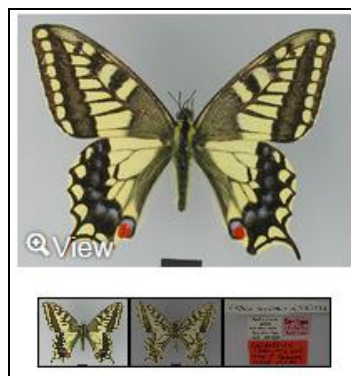


Figure 9 *Papilio machaon* Linnaeus, 1758

```

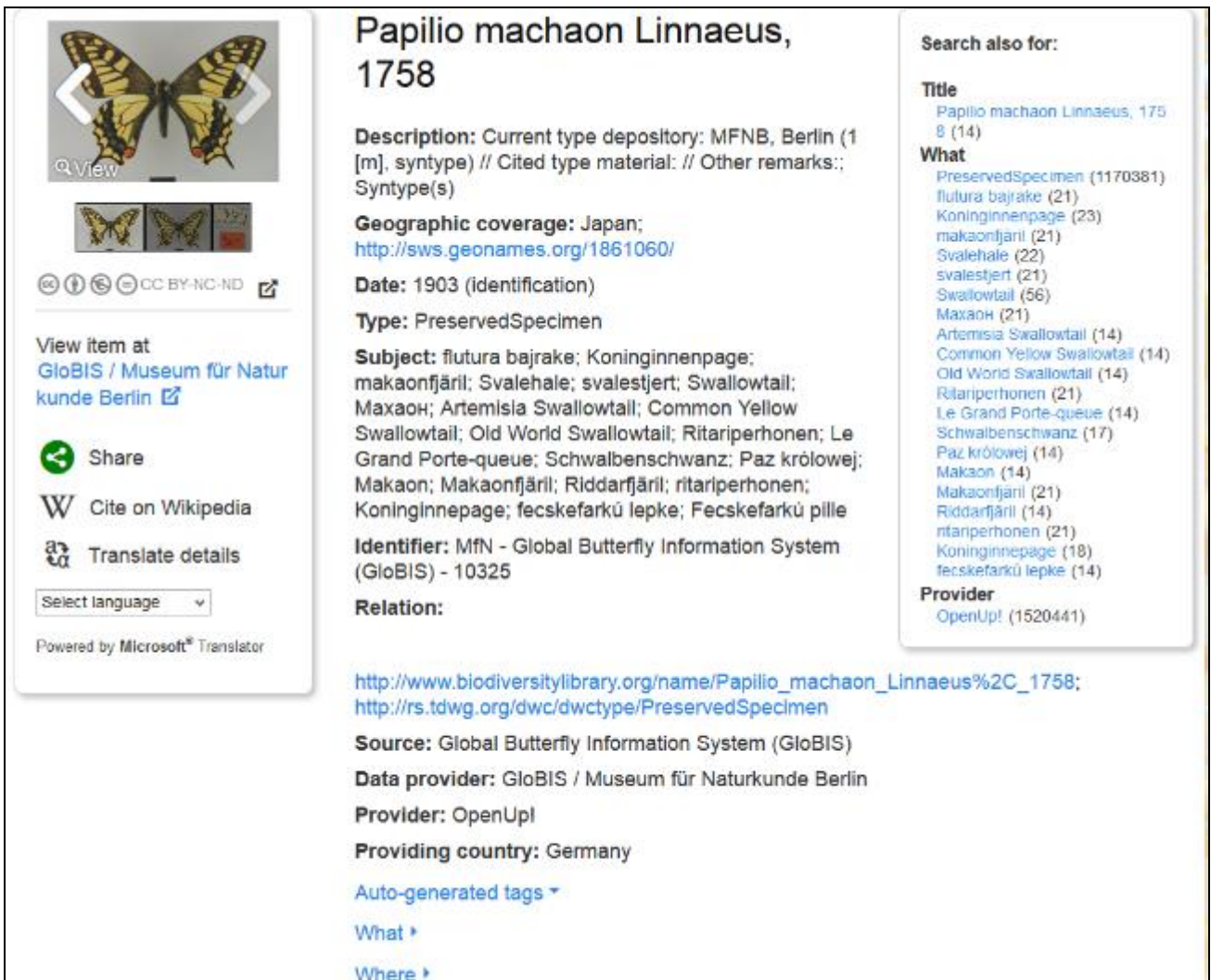
<rdf:RDF>
<edm:ProvidedCHO rdf:about="GLOBIS:MFN:GERMANY/10325">
<dc:identifier>Mfn - Global Butterfly Information System (GloBIS) - 10325</dc:identifier>
<dc:title>Papilio machaon Linnaeus, 1758</dc:title>
<dc:description>Current type depository: MFNB, Berlin (1 [m], syntype) // Cited type material: // Other
remarks:</dc:description>
<dc:description>Syntype(s)</dc:description>
<dc:date>1903 (identification)</dc:date>
<dc:relation>http://www.biodiversitylibrary.org
/name/Papilio_machaon_Linnaeus%2C_1758</dc:relation>
<dc:source>Global Butterfly Information System (GloBIS)</dc:source>
<dc:subject>flutura bajrake</dc:subject>
<dc:subject>Koninginnenpage</dc:subject>
<dc:subject>makaonfjiril</dc:subject>
<dc:subject>Svalehale</dc:subject>
<dc:subject>svalestjert</dc:subject>
<dc:subject>Swallowtail</dc:subject>
<dc:subject>Μαχαον</dc:subject>
<dc:subject>Artemisia Swallowtail</dc:subject>
<dc:subject>Common Yellow Swallowtail</dc:subject>
<dc:subject>Old World Swallowtail</dc:subject>
<dc:subject>Ritariperhonen</dc:subject>
<dc:subject>Le Grand Porte-queue</dc:subject>
<dc:subject>Schwalbenschwanz</dc:subject>
<dc:subject>Paz królowej</dc:subject>
<dc:subject>Makaon</dc:subject>
<dc:subject>Makaonfjiril</dc:subject>
<dc:subject>Riddarfjiril</dc:subject>
<dc:subject>ritariperhonen</dc:subject>
<dc:subject>Koninginnepage</dc:subject>
<dc:subject>fecskefarkú lepke</dc:subject>
<dc:subject>Fecskefarkú pille</dc:subject>
<dc:subject>http://openup.nhm-wien.ac.at/commonNames/references/scientificName
/1549</dc:subject>
<dc:type>Preserved Specimen</dc:type>
<dcterms:spatial>Japan</dcterms:spatial>
<dcterms:temporal></dcterms:temporal>
<edm:hasType rdf:resource="http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen">
</edm:hasType>
<edm:type>IMAGE</edm:type>
</edm:ProvidedCHO>

```

Figure 10 Record with description of the object

The stylesheet defines that the vocabulary information is added to a record via the metadata fields *dc:subject*. For each *abcd:FullScientificNameString* the vocabulary is searched for an appropriate common name. When one is found it is added to the metadata as a value of *dc:subject*. In addition, the source of the common name with its reference link is added to the final *dc:subject* metadata field (see Figure 10).

In Europeana the record with the subjects looks like shown in Figure 11.



Papilio machaon Linnaeus, 1758

Description: Current type depository: MFNB, Berlin (1 [m], syntype) // Cited type material: // Other remarks:; Syntype(s)

Geographic coverage: Japan;
<http://sws.geonames.org/1861060/>

Date: 1903 (identification)

Type: PreservedSpecimen

Subject: flutura bajrake; Koninginnenpage; makaonfjåril; Svalehale; svaletstjert; Swallowtail; Maxaon; Artemisia Swallowtail; Common Yellow Swallowtail; Old World Swallowtail; Ritariperhonen; Le Grand Porte-queue; Schwalbenschwanz; Paz królowej; Makaon; Makaonfjåril; Riddarfjåril; ritariperhonen; Koninginnepage; fecskefarkú lepke; Fecskefarkú pille

Identifier: MfN - Global Butterfly Information System (GloBIS) - 10325

Relation:

http://www.biodiversitylibrary.org/name/Papilio_machaon_Linnaeus%2C_1758;
<http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen>

Source: Global Butterfly Information System (GloBIS)

Data provider: GloBIS / Museum für Naturkunde Berlin

Provider: OpenUp!

Providing country: Germany

Search also for:

Title
Papilio machaon Linnaeus, 1758 (14)

What
PreservedSpecimen (1170381)
flutura bajrake (21)
Koninginnenpage (23)
makaonfjåril (21)
Svalehale (22)
svaletstjert (21)
Swallowtail (56)
Maxaon (21)
Artemisia Swallowtail (14)
Common Yellow Swallowtail (14)
Old World Swallowtail (14)
Ritariperhonen (21)
Le Grand Porte-queue (14)
Schwalbenschwanz (17)
Paz królowej (14)
Makaon (14)
Makaonfjåril (21)
Riddarfjåril (14)
ritariperhonen (21)
Koninginnepage (18)
fecskefarkú lepke (14)

Provider
OpenUp! (1520441)

Figure 11 Europeana record with Subjects

3 BIODIVERSITY HERITAGE LIBRARY

The stylesheet also defines that for each scientific name the BHL API “bibliography by URL” is evoked and a link to the BHL bibliography is added in the dc:relation metadata field.

```
<xsl:variable name="bhllink"><xsl:for-each select="$units/Unit">
<xsl:call-template name="BHLLink" />
</xsl:for-each></xsl:variable>
<xsl:for-each select="fn:distinct-values($bhllink/dc:relation)">
<dc:relation><xsl:value-of select="."/></dc:relation>
</xsl:for-each>
```

Figure 12 Mapping dc:relation

For this mapping a service of the Biodiversity Heritage Library is used¹.

3.1 Transformation result

Figure 14 shows the butterfly *Luehdorfia japonica* Leech, 1889. This record includes *dc:relation* with the BHL-service (see Figure 14).



Figure 13 *Luehdorfia japonica* Leech, 1889

Provided CHO	Web Resource	Web Resource	Web Resource	Web Resource
Aggregation	Info			
	<ul style="list-style-type: none"> rdf:about : GLOBIS:MFN:GERMANY/8515 Title : Luehdorfia japonica Leech, 1889 Description : Current type depository: MFNB, Berlin // Cited type material: Type: [m] in coll. Staudinger (Zoolog. Museum, Berlin) // Other remarks: Description : Holotype Date : 1932 (identification) Type : Preserved Specimen Identifier : MiN - Global Butterfly Information System (GloBIS) - 8515 Source : Global Butterfly Information System (GloBIS) Relation : http://www.biodiversitylibrary.org/name/Luehdorfia_japonica_Leech%2C_1889 Spatial Coverage : Japan Has Type : http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen Europeana Type : Image 			

Figure 14 Record with *dc:relation*

When clicking on http://www.biodiversitylibrary.org/name/Luehdorfia_japonica_Leech%2C_1889 (28. Jan. 2014.) the following information can be seen (see Figure 15).

¹ <http://www.biodiversitylibrary.org/> 28. Jan. 2014.

Type	Title	Authors	Volume	Date	Page #
Serial	Berliner entomologische Zeitschrift / herausg.	Berliner Entomologischer Verein Entomologische Verein in Berlin.	v. 41 1896	1881	Page 17
Serial	Bulletin of the British Museum (Natural His	British Museum (Natural History) Natural History Museum (London, England)	31	1975	Page 93
Serial	Entomologische Rundschau.		jahrg. 30-31 1909		(go to page)
Serial	Entomologische Zeitschrift.	Internationaler Entomologischer Verein.	v. 14 (1900-01)	1887	Page 114
Serial	Novitates Zoologicae.		v. 25 (1918)	1918	Page 65
Serial	Societas entomologica.	Rühl, Fritz. Rühl, Marie. International Entomological Society. Internationaler Entomologischer Verein.	jahrg. 19-21 1886		Page 175

Figure 15 Bibliographic information concerning *Luehdorfia japonica* Leech, 1889

When clicking on one of the result sets (Page # for example the first one) the bibliographic source is shown in detail (see Figure 16).

Berliner entomologische Zeitschrift / herausgegeben von dem Entomologischen Verein in Berlin v. 41 1896

Sitzungsberichte d. Berl. Ent. Vereins f. d. Jahr 1895. (17)

Schluss der Sitzungsberichte
des Entomologischen Vereins in Berlin für das Jahr 1895.

Sitzung vom 12. September.

Herr Stichel zeigt mehrere Stücke des seltenen japanischen Schmetterlings *Eurippe charonda*; die vorgelegten 2 ♀♀ sind insofern dimorph, als das eine fast schwarz mit gelben Flecken, ohne eine Spur von Schiller, das andere leicht blau schillernd mit vorwiegend weissen Flecken ist. Ferner zeigt derselbe den zweiten japanischen Vertreter dieser Gattung, *Eurippe japonicus* in verschiedenen Varianten, und die schöne und seltene *Luehdorfia japonica*, eine Lokalform der *Luehd.* *Pacifici* von gegenüberliegenden Festlande.

Herr Dönitz hält einen längeren Vortrag über die berüchtigte Tsetse-Fliege, *Glossina longipalpis* Wiedemann, unter Vorzeigung zweier Stücke aus Westafrika. Wiedemann hat die Art nach einem von Afzelius auf einer Reise 1792-94 in Sierra Leone erhaltenen Stücke im Jahre 1830 beschrieben und dafür die Gattung *Glossina* geschaffen. Später wurden von Westwood drei neue Arten: *morrisiana*, *taboniformis* und *tachinoides* aufgestellt; Walker fügte *fusca* (als *Stomoxys fuscus*) und Bigot *ventriosus* hinzu, welche letztere aus Australien stammen soll, während die anderen echten Tsetse-Fliegen in Afrika heimisch sind.*

Eine gute Zusammenfassung alles bis dahin Bekannten giebt Van der Wulp in Tijdschr. voor Ent. 1884, S. 143. Wahrscheinlich kennt man nur die ♀♀, und es ist fraglich, ob die ♂♂ auch stechen.

Die Wiedemann'sche Art, *Gl. longipalpis*, hat die Größe und Gestalt einer gewöhnlichen Stubenfliege, doch sind die Flügel matt rauchgrau, anstatt durchscheinend und glänzend, und anstatt eines einziehbaren, an der Spitze hakenförmig gekrümmten Sangrüssels hat sie einen borstenförmigen, steifen Stachel, der aus drei nebeneinander liegenden Theilen besteht und ungefähr eben so lang ist wie der Thorax. Vor den Augen ragt eine kleine, stark gefiederte Borste hervor.

*Zwei andere Arten, *grossa* und *pallicera*, von Bigot 1891 beschrieben, scheinen nur Varietäten der *Gl. morrisiana* Westw. zu sein.

Scientific Names on this Page

- Page 17
- [Glossina](#)
- [Glossina longipalpis](#)
- [Glossina morrisiana](#)
- [Luehdorfia japonica Leech, 1889](#)**
- [Stomoxys](#)

Figure 16 Bibliographic source in detail

In Europeana the relation looks like shown in Figure 17.



Luehdorfia japonica Leech, 1889

Description: Current type depository: MFNB, Berlin // Cited type material: Type: [m] in coll. Staudinger (Zoolog. Museum, Berlin) // Other remarks:; Holotype

Geographic coverage: Japan; <http://sws.geonames.org/1861060/>

Date: 1932 (identification)

Type: PreservedSpecimen

Identifier: MfN - Global Butterfly Information System (GloBIS) - 8515

Relation: http://www.biodiversitylibrary.org/name/Luehdorfia_japonica_Leech%2C_1889
<http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen>

Source: Global Butterfly Information System (GloBIS)

Data provider: GloBIS / Museum für Naturkunde Berlin

Provider: OpenUp!

Providing country: Germany

[Auto-generated tags](#)

Search also for:

Title
[Luehdorfia japonica Leech, 1889 \(1\)](#)

What
[PreservedSpecimen \(1170381\)](#)

Provider
[OpenUp! \(1520441\)](#)

View item at [GloBIS / Museum für Naturkunde Berlin](#)

Share

Cite on Wikipedia

Translate details

Select language

Powered by Microsoft® Translator

Figure 17 The BHL-service in Europeana

4 GEONAMES and DWC Type vocabulary

When a raw record contains geographic coordinates the http://www.geonames.org/maps/google_%7BLatitudeDecimal%7D_%7BLongitudeDecimal%7D.html service is used. In the stylesheet the service is mapped to *edm:Place*. (see Figure 18).

```
<xsl:variable name="edmPlace">
  <xsl:for-each select="$units/Unit/Gathering/SiteCoordinateSets/SiteCoordinates/CoordinatesLatLong">
    <xsl:if test="LongitudeDecimal and LatitudeDecimal and not(LongitudeDecimal='0' and LatitudeDecimal='0')">
      <edm:Place rdf:about="http://www.geonames.org/maps/google_{LatitudeDecimal}_{LongitudeDecimal}.html">
        <xsl:if test="SpatialDatum='WGS84'">
          <wgs84:lat><xsl:value-of select="LatitudeDecimal"/></wgs84:lat>
          <wgs84:long><xsl:value-of select="LongitudeDecimal"/></wgs84:long>
        </xsl:if>
      </edm:Place>
    </xsl:if>
  </xsl:for-each>
</xsl:variable>
```

Figure 18 Stylesheet containing geonames information


4.1 Transformation result

Figure 19 shows another specimen called *Ranunculus trichophyllus* Chaix. As can be seen it contains spatial information.

Provided CHO	Web Resource	Web Resource	Concept	Aggregation
Info	<p> rdf:about: HERBARWU:WU:AUSTRIA/267350 Title: Ranunculus trichophyllus Chaix Subject: Water buttercup Description: Hydrobotanische Exkursion ins Wiener Becken unter der Leitung von Univ.Prof.Dr. Georg Janauer. Contributor: Gilli, C. (collector) Contributor: C. Gilli & G. Janauer (identifier) Type: Preserved Specimen Identifier: WU - Herbarium WU - 267350 Source: University of Vienna, Institute for Botany - Herbarium WU Relation: http://www.biodiversitylibrary.org/name/Ranunculus_trichophyllus_Chaix Spatial Coverage: (47.7208333327,16.0672222216) WGS84 ← Spatial Coverage: Altitude: 373 m Spatial Coverage: [Bundesland] Spatial Coverage: Austria Spatial Coverage: Niederösterreich, Neunkirchen, Kehrbach (künstliches Gerinne). Has Type: http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen Europeana Type: Image </p>			

Figure 19 The specimen *Ranunculus trichophyllus* Chaix

When looking at this record in Europeana (see Figure 20) the “Place Term” information is added by OpenUp! (see Figure 21).



View item at [University of Vienna, Institute for Botany - Herbarium WU](#)

Share

Cite on Wikipedia

Translate details

Select language

Powered by Microsoft® Translator

Ranunculus trichophyllus Chaix

Description: Hydrobotanische Exkursion ins Wiener Becken unter der Leitung von Univ.Prof.Dr. Georg Janauer.

Contributor: Gilli, C. (collector); C. Gilli & G. Janauer (identifier)

Geographic coverage: (47.7208333327,16.0672222216) WGS84; Altitude: 373 m; [Bundesland]; Austria; Niederösterreich, Neunkirchen, Kehrbach (künstliches Gerinne).

Type: Preserved Specimen

Subject: Water buttercup

Identifier: WU - Herbarium WU - 267350

Relation: http://www.biodiversitylibrary.org/name/Ranunculus_trichophyllus_Chaix; <http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen>

Source: University of Vienna, Institute for Botany - Herbarium WU

Data provider: University of Vienna, Institute for Botany - Herbarium WU

Provider: OpenUp!

Providing country: Austria

Auto-generated tags ▾

What ▾

Where ▾

Place Term: http://www.geonames.org/maps/google_47.7208333327_16.0672222216.html

Geo Space: 47.720833; 16.067223

Search also for:

Title
[Ranunculus trichophyllus Chaix](#) (52)

Who
[Gilli, C. \(collector\)](#) (1140)
[C. Gilli & G. Janauer \(identifier\)](#) (14)

What
[Preserved Specimen](#) (1170381)
[Water buttercup](#) (5)

Provider
[University of Vienna, Institute for Botany - Herbarium WU](#) (26174)
[OpenUp!](#) (1520441)




Figure 20 Europeana record with “Geographic coverage” and “Place Term” information

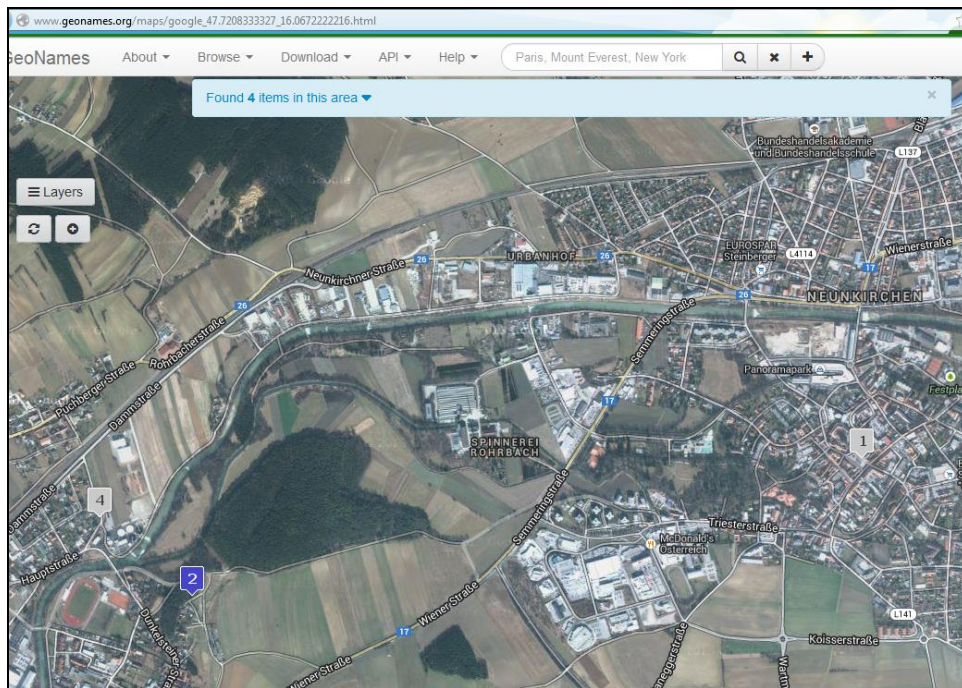


Figure 21 http://www.geonames.org/maps/google_47.7208333327_16.0672222216.html

In this sample record the link to the Darwin Core Type vocabulary² can be seen as well.

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Ranunculus trichophyllus Chaix

Description: Hydrobotanische Exkursion ins Wiener Becken unter der Leitung von Univ.Prof.Dr. Georg Janauer.

Contributor: Gilli,C. (collector); C. Gilli & G. Janauer (identifier)

Geographic coverage: (47.7208333327,16.0672222216) WGS84; Altitude: 373 m; [Bundesland]; Austria; Niederösterreich, Neunkirchen, Kehrbach (künstliches Gerinne).

Type: PreservedSpecimen

Subject: Water buttercup

Identifier: WU - Herbarium WU - 267350

Relation: <http://www.biodiversitylibrary.org/name/Ranunculus-trichophyllus>
<http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen>

Source: University of Vienna, Institute for Botany - Herbarium WU

Provider: OpenUp!

Providing country: Austria

Search also for:

Title
Ranunculus trichophyllus Chaix (48)

Who
Gilli,C. (collector) (1133)
C. Gilli & G. Janauer (identifier) (14)

What
PreservedSpecimen (894381)
Water buttercup (5)

Provider
OpenUp! (1240571)

Link to Darwin Core Vocabulary

Term Name: PreservedSpecimen

Identifier:	http://rs.tdwg.org/dwc/dwctype/PreservedSpecimen
Definition:	A resource describing a preserved specimen.
Comment:	For discussion see http://code.google.com/p/darwincore/wiki/DwcTypeVocabulary
Type of Term:	http://www.w3.org/2000/01/rdf-schema#Class
Member Of:	http://rs.tdwg.org/dwc/terms/Dwctype
Version:	PreservedSpecimen-2011-10-16
Refines:	
Details:	PreservedSpecimen

Figure 22 Europeana record with Link to Darwin Core Type vocabulary

² <http://rs.tdwg.org/dwc/dwctype/> 28 Jan 2014.

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